PATRICIA A. LAUDON

IBLA 87-96 Decided January 25, 1989

Appeal from a decision of the Colorado State Office, Bureau of Land Management, rejecting simultaneous oil and gas lease offer C-43228.

Affirmed in part, reversed in part.

1. Oil and Gas Leases: Known Geologic Structure

A BLM determination that lands are within a known geologic structure of a producing oil or gas field
will be sustained on appeal where the record shows
that these lands are underlain by a formation deter-mined to be productive elsewhere in the area, and
where appellant fails to establish by a preponderance
of the evidence that the designation is in error.

2. Oil and Gas Leases: Known Geologic Structure

BLM does not properly include land within the known geologic structure of a producing oil or gas field
where the land does not constitute the smallest legal subdivision crossed by the productive limits of an entrapping structure but is included merely because
it falls within a 640-acre state spacing unit.

APPEARANCES: Patricia A. Laudon, pro se; Lowell L. Madsen, Esq., Office of the Regional Solicitor, U.S. Department of the Interior, Denver, Colorado, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE IRWIN

Patricia A. Laudon has appealed from a decision of the Colorado State Office, Bureau of Land Management (BLM), dated October 7, 1986, rejecting her noncompetitive oil and gas lease offer C-43228. Appellant's applica-tion was drawn with priority for parcel CO-149 in the February 1986 filing period. 1/ The basis for the decision was that the lands sought had been

1/ Appellant's oil and gas lease offer embraced 1,280 acres described as: sec. 10, NW^ SW^, E\ SW^, SE^; sec. 14, NW^, S\; Sec. 15, E\, E\ W\, SW^ SW^, T. 4 S., R. 97 W., sixth principal meridian, Rio Blanco County, Colorado.

determined to be within an addition to several known geologic structures that were designated as the Greater Sulphur Creek known geologic structure (KGS), effective March 3, 1986, and were therefore only subject to competitive bidding under 30 U.S.C. | 226(b) (1982).

BLM's KGS action is summarized in a report dated March 3, 1986, by geologist Richard L. Watson (Watson Report), which states in pertinent part as follows:

> This KGS action was initiated by the completion of development gas wells in the Mesaverde Group.
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> * * * * * * *
>
> Production is primarily from sandstones within the Upper Cretaceous Mesaverde Group. The Mesaverde is described as interbedded white, gray, and brown, fine-to-coarse-grained sandstone and gray shale with local interbeds of coal. It was deposited in an irregularly fluctuating shoreline environment. Gas productive, discontinuous sandstones are interbedded with hydrocarbon rich, gray-black shales. The sandstones are characteristically poorly sorted, fine grained, and tightly cemented. They are thought to be a complex of shallow water beach, bar, delta, and channel deposits into which natural gas migrated from the interbedded shales. Irregular cementing of the sandstones created permeability barriers within the individual beds creating stratigraphic-type reservoirs, with regional structure contributing only to the direction of the gas migration.
>
> Regional dip is to the east-northeast at a rate of 200 to 500 feet per mile. No structural closures exist within the area.
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> * * * * * * *
>
> Sandstone beds within the Mesaverde are lenticular and discontinuous and can only be correlated over short distances.
>
> The Mesaverde is about 4,000 feet thick in this area and several intervals within this section contain gas-productive sandstones. Individual sandstones rarely exceed 20 feet in thickness and fracture treatment of multiple beds over an inter-val of several hundred feet is usually necessary to achieve commercial deliverabilities.
>
> Most of the wells in the area did not penetrate the full section of Mesaverde, but were completed in the upper 500 feet
> of the unit. Those wells in which compensated neutron formation density logs were run were examined for gas-bearing sandstone occurrences in the upper 500 feet of the Mesaverde. Criteria used were: gamma-ray response indicating a fairly clean sandstone bed 4 feet thick or greater, density porosity values of 8 percent or greater, and "gas-effect" as noted on the neutron porosity curve.

> The net thicknesses of intervals meeting all of the above criteria within the upper 500 feet of the Mesaverde were totaled for each well. These totals were then contoured; the zero isopach determines the limit of the trap for this interval of the Mesaverde Group.
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> * * * * * * *
>
> Of the 13 spacing orders issued for the Mesaverde by the Colorado Oil and Gas Conservation Commission, 4 are issued for 640-acre spacing. Most all of the gas wells completed in the Mesaverde are drilled on a 640-acre pattern. The Greater Sulphur Creek area has not been spaced by the Commission, but the above evidence indicates that the establishment of the KGS based on 640-acre spacing units is logical. All full sections cut by and interior to the zero isopach of the net productive Mesaverde interval are included in the KGS.
>
> In T. 2 S., R. 98 W., there are three sections which were included in the existing Sulphur Creek-Fawn Creek KGS that fall outside of the zero isopach of the net productive Mesaverde intervals: sec. 9, S\; sec. 16; and sec. 19, E\ and E\ W\. The gas well in sec. 9 was completed in the Green River Formation and the gas wells in sec. 19 were completed in the Wasatch Formation. Since these formations were not evaluated in the Greater Sulphur Creek KGS determination, the above sections are retained within the existing acreage.

(Watson Report at 1-2).

Challenging BLM's evaluation, appellant has submitted a letter, dated May 6, 1987, by consulting geologist Richard B. Laudon. 2/ Attached to the letter as Exhibit 1 is a location map on which the lands embraced by C-43228 have been marked by diagonal lines. Attached to the letter as Exhibit 2 is a Stratigraphic Cross-Section of four wells: the Gabbs 2 Thorman, the Thurman #1 Govt., the Continental #1 Willow, and the Skelly #1 Unit.

Laudon's first challenge focuses on BLM's finding that the Mesaverde sandstone beds are "lenticular and discontinuous and can only be correlated over short distances." Laudon agrees with this finding but interprets it as indicating that "it is impossible to know if any specific Mesaverde reservoir sandstone even exists, much less to know if it is hydrocarbon-bearing, except at or very near drillsites where the Mesaverde has been penetrated."

Responding to Laudon's challenges in a June 12, 1987, memorandum, BLM's geologist Watson points out that the KGS action "was not based on any single reservoir sandstone but on the aggregate of individual sandstone reservoirs within the Mesaverde interval."

2/ We presume Mr. Laudon is a member of appellant's family. See 43 CFR 1.3(b)(3)(i).

Laudon next observes that the gas wells mentioned in the Watson Report are between 4 and 15 miles away from the lands in C-43228. Laudon asserts that only one well, a dry hole, was drilled on C-43228. Referring to his cross-section (Exh. 2), he asserts:

> In the cross-section the correlations are arguable, and uncertain. That is the point. The reason the correlations are uncertain is that individual reservoir sandstones are not physically continuous from one well to the next. In this situation geologists "correlate", after a fashion, by matching up the sandier zones with one another and the shalier zones with one another. The datum of the stratigraphic cross-section is the putative top of Mesaverde which is itself uncertain.
>
> The general lack of continuity is also indicated by the data recorded on the Petroleum Information completion cards. Those cards for the four wells on the cross-section (exhibit 2) are attached as exhibit 3. It is standard industry practice for the wellsite geologist to "pick the formation tops" by correlating with adjacent wells and for the operating Company to report those correlations on the PI completion card. It is significant that there is no consistency in even the formation tops report in the vicinity of lease C-43228.
>
> The only way that it will be possible to determine whether the lands in C-43228 are hydrocarbon bearing is to drill on those lands.

(Laudon Letter at 2).

In his June 12, 1987, response, Watson asserts that the dry hole, thought by Laudon to be on C-43228, "is the Gabbs Exploration #2 Thorman-Government located in the SW^ SW^ sec. 10, T. 4 S., R. 97 W. This well
is not located on lands included in lease offer C-43228 and, in fact, was included in a previous KGS determination, the Willow Creek KGS, established July 8, 1961." (Emphasis in original.) Referring to the limits of C-43228 as depicted on Laudon's Exhibit 1, Watson states: "Exhibit 1 shows the SW^ SW^ sec. 10 and the SW^ NW^ and NW^ SW^ sec. 15 as part of lease offer C-43228. These lands are, in fact, not a part of C-43228 but are currently unleased lands within the pre-existing Willow Creek KGS." (Emphasis in original.) Watson further notes that Laudon misidentified two of the well logs in his cross-section by reversing the captions for the Continental #1 Willow and the Skelly #1 Unit. With respect to the Petroleum Information completion cards, Watson states:

> It is well known within the field of petroleum geology that different geologists working for different companies in the same area often pick the top of a particular formation within widely differing intervals of the stratigraphic column. Therefore, it is no surprise that ". . . there is no consistency in even the formation tops report in the vicinity of lease C-43228." Logs
> for wells within the Greater Sulphur Creek KGS were correlated to

the extent possible in order to pick the top of the Mesaverde in each disregarding, if necessary, the tops reported on the PI completion cards.

Finally, Watson responds that in order to be properly determined to be within a KGS, lands need not be proven productive, only presumptively productive.

[1] Section 17(b) of the Mineral Leasing Act, as amended, 30 U.S.C. | 226(b) (1982), provides that public domain lands within the KGS of a producing oil or gas field shall be leased by competitive bidding. A KGS is "technically the trap in which an accumulation of oil or gas has been discovered by drilling and determined to be productive, the limits of which include all acreage that is presumptively productive." 43 CFR 3100.0-5(1). No discretion exists in the Department to issue a noncompetitive lease, as appellant seeks, for lands properly determined to be within a KGS. McDonald v. Clark, 771 F.2d 460, 464 (10th Cir. 1985); McDade v. Morton, 353 F. Supp. 1006 (D.D.C. 1973), aff'd, 494 F.2d 1156 (D.C. Cir. 1974). Where lands described in a noncompetitive oil and gas lease offer are determined to be within a KGS of a producing oil or gas field at any time prior to lease issuance, the noncompetitive lease offer must be rejected. 43 CFR 3112.5-2(b). The burden of showing by a preponderance of the evidence that BLM's determination is in error rests with appellant. Bender v. Clark, 744 F.2d 1424 (10th Cir. 1984).

In Thunderbird Oil Corp., 91 IBLA 195 (1986), aff'd sub nom., Planet Corp. v. Hodel, No. 86-679 HB (D.N.M. May 6, 1987), we noted that in classifying lands as KGS, BLM must merely establish that a producing structure exists which extends to the lands in question. Id., 91 IBLA at 202. By establishing this fact, BLM necessarily establishes that the land is presumptively productive. While there must be a determination that a structural or stratigraphic trap exists which contains oil or gas, usually by completion of a producing well, the limits of a KGS are not simply the immediate area around that well, but all land where geologic or other evidence indicates that there is a reasonable probability that the land is underlain by the trap or a series of related traps in the same formation(s). Such land is considered presumptively productive because of its inclusion in a KGS. Roger Schock, 105 IBLA 121 (1988); B. K. Killion, 90 IBLA 378 (1986); Angelina Holly Corp., 70 IBLA 294 (1983), aff'd, Angelina Holly Corp. v. Clark, 587 F. Supp. 1152 (D.D.C. 1984). An appellant challenging such a determination must either show that the producing structure does not underlie the land or affirmatively establish, as a fact, that the land involved is not productive from the structure in question. Thunderbird Oil Co., supra at 202.

BLM's inclusion of the lands in C-43228 in the Greater Sulphur KGS is based on its finding that these lands are presumptively productive from the Mesaverde interval. Appellant has failed to establish that there is no reasonable probability that the producing structure underlies the subject land. At best, appellant offers a separate interpretation of the geological nature of the land. That opinion is not enough to overcome BLM's determination that the land is situated within a KGS. Schock, supra at 125. Appellant

states that the only way to demonstrate productivity is to drill a well on the land in question. As we have noted in previous appeals, KGS designations cannot be based on geologic certainty. Nonetheless, where BLM's KGS actions are supported by pertinent data and scientific reasoning, the Secretary is entitled to rely on the conclusions of his technical experts in the field. While appellant's evaluations and disagreements with BLM may be reasonable, they fall short of the quantum of proof necessary to overturn a BLM KGS action. L. M. Grace, Jr., 105 IBLA 166, 170 (1988).

[2] Although BLM's KGS action is soundly based, it should not have rejected appellant's lease offer in its entirety. The Watson Report states that "[a]ll full sections cut by and interior to the zero isopach of the net productive Mesaverde interval" were included in the Greater Sulphur Creek KGS. According to BLM's KGS map, the zero isopach runs through sec. 14,
T. 4 S., R. 97 W., in a northeast-southwest direction, leaving portions of the SE^ outside its limits. Among the lands sought in appellant's lease offer is the S\ of sec. 14. In Charles J. Rydzewski, 105 IBLA 9 (1988), and Pamela S. Crocker-Davis, 94 IBLA 328 (1986), we held

> that BLM properly includes in a KGS only the smallest legal subdivision (quarter quarter section) and not an entire 640-acre State spacing unit crossed by the productive limits of an entrapping structure as drawn along such a marker. Thus, we expressly rejected BLM's inclusion of land within a KGS merely because it fell within a 640-acre State spacing unit, in the absence of any evidence that designation as a spacing unit itself indicated the presence of a producing structure.

105 IBLA at 13. See also Celeste C. Grynberg, 106 IBLA 219, 222 (1988).

From the Watson Report and BLM's KGS map it is clear that the entirety of sec. 14 was included in the KGS because of the 640-acre spacing rationale. Since there are legal subdivisions within sec. 14 which are not within the limits of the producing structure (and therefore not presumptively productive), BLM's decision rejecting the offer as to such lands must be reversed.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision is affirmed in part and reversed in part and the case file is remanded for further action consistent herewith.

Will A. Irwin
Administrative Judge

I concur:

Kathryn A. Lynn
Administrative Judge
Alternate Member